

Fig. 1

Fig. 2

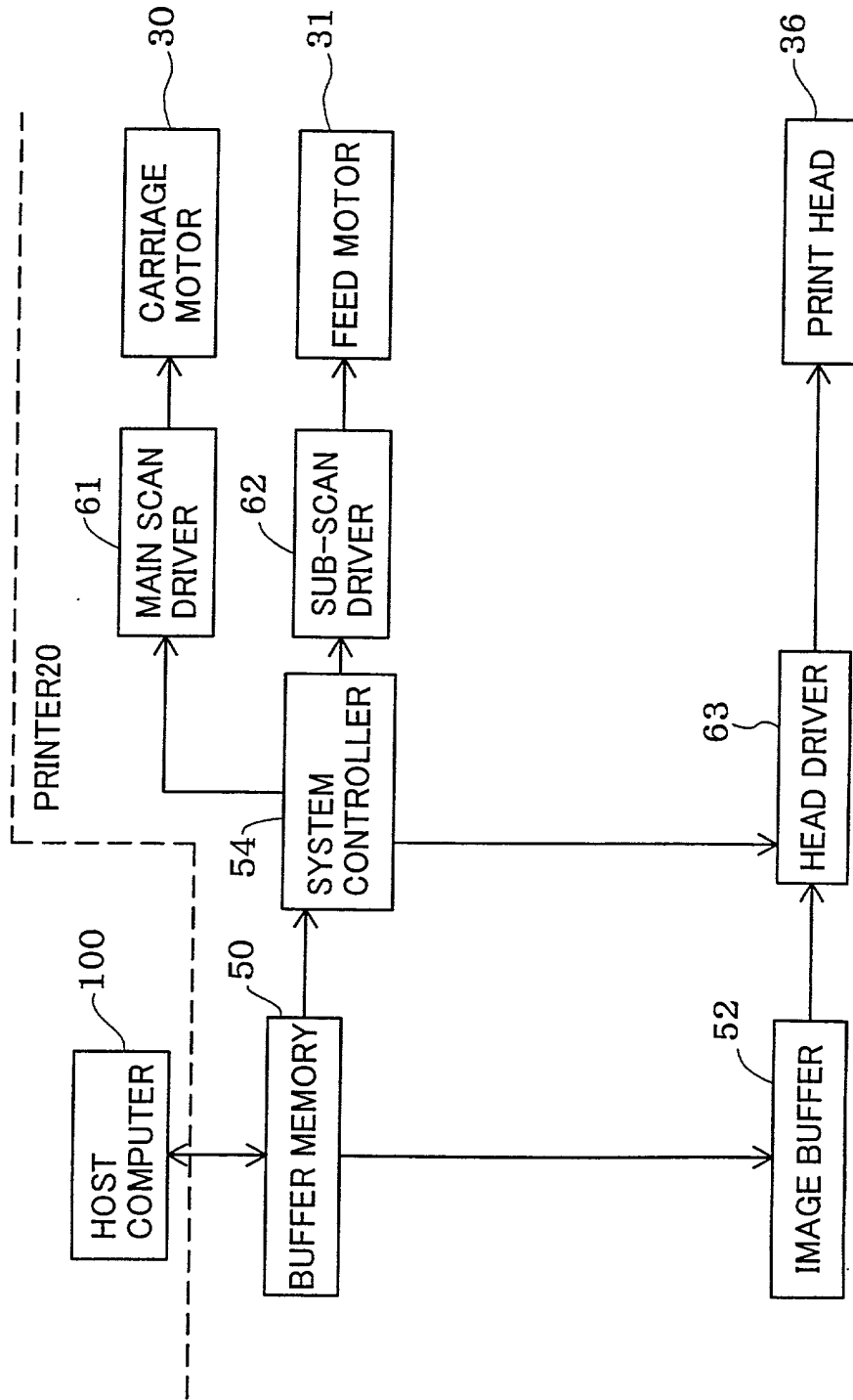


Fig. 3

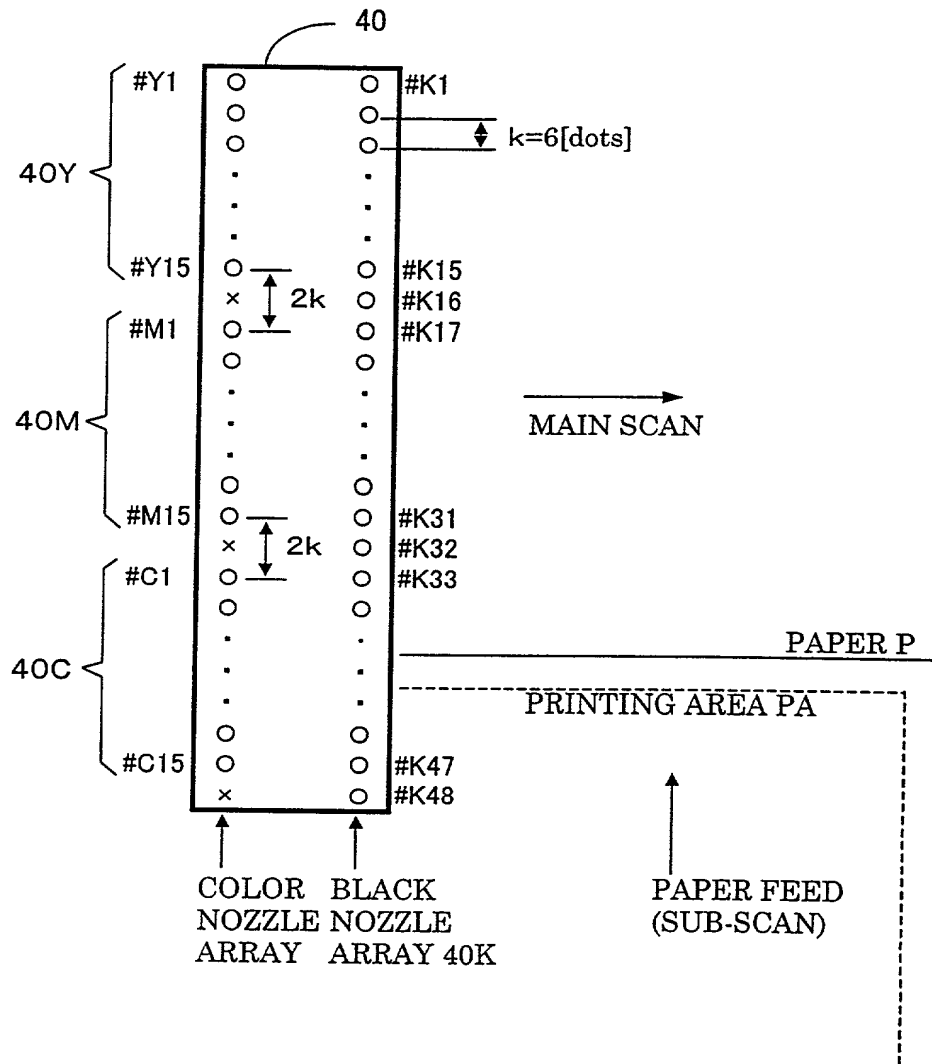


Fig. 4 (A) CONCEPT OF SUB-SCAN FEED($s=1$)

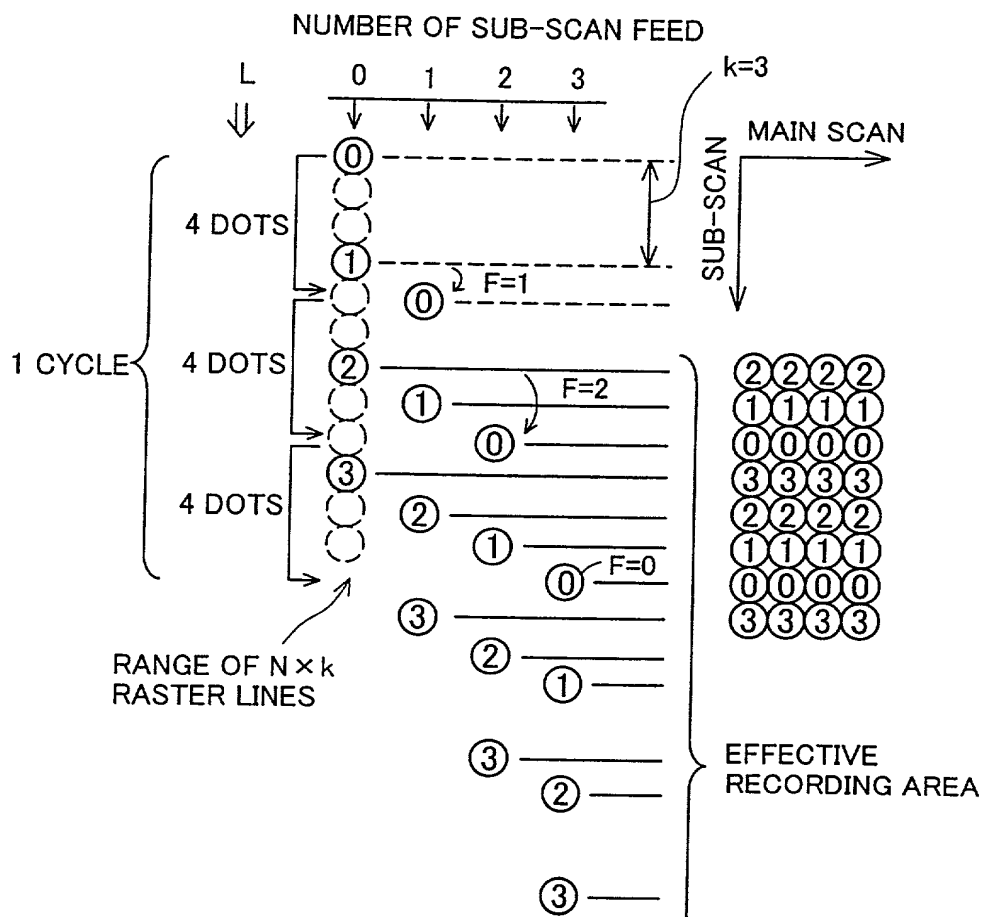


Fig. 4 (B) PARAMETERS

NOZZLE PITCH k : 3 [dot]
NUMBER OF USED NOZZLES N : 4
NUMBER OF SCAN REPEATS s : 1
NUMBER OF EFFECTIVE NOZZLES N_{eff} : 4

NUMBER OF SUB-SCAN FEED	0	1	2	3
FEED AMOUNT L [dot]	0	4	4	4
ΣL	0	4	8	12
$F = (\Sigma L) \% k$	0	1	2	0

Fig. 5 (A) CONCEPT OF SUB-SCAN FEED($s=2$)

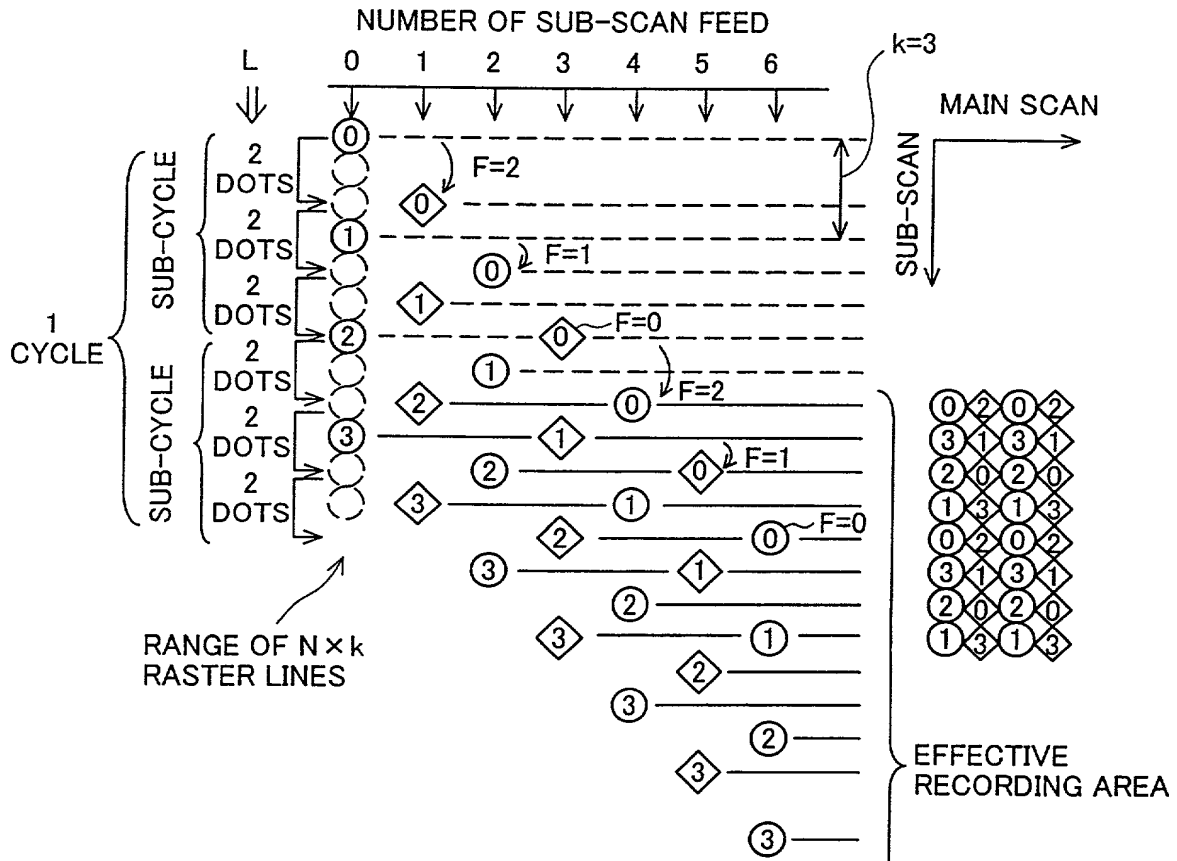


Fig. 5 (B) PARAMETERS

NOZZLE PITCH k : 3 [dot]
NUMBER OF USED NOZZLES N : 4
NUMBER OF SCAN REPEATS s : 2
NUMBER OF EFFECTIVE NOZZLES N_{eff} : 2

NUMBER OF SUB-SCAN FEED	0	1	2	3	4	5	6
FEED AMOUNT L [dot]	0	2	2	2	2	2	2
ΣL	0	2	4	6	8	10	12
$F = (\Sigma L) \% k$	0	2	1	0	2	1	0

Fig. 6

SCAN PARAMETERS IN FIRST EMBODIMENT

Nozzle pitch : $k = 6$ [dots]

Number of scan repeats : $s = 1$

Number of working nozzles : $N = 13$

Number of effective nozzles : $N_{eff} = 13$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No.	0	1	2	3	4	5	6
FEED L [dots]	0	13	13	13	13	13	13
ΣL	0	13	26	39	52	65	78
$F=(\Sigma L)\%k$	0	1	2	3	4	5	0

Fig. 7

WORKING NOZZLES IN FIRST EMBODIMENT

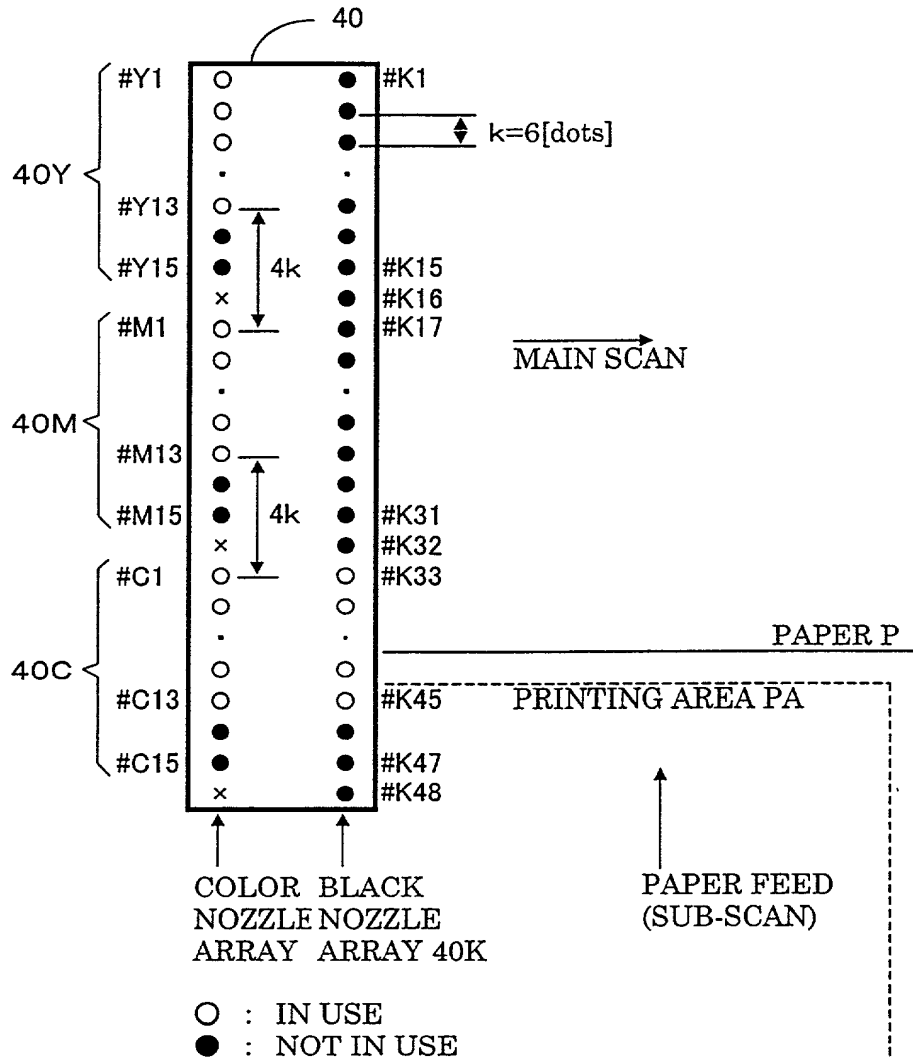


Fig. 8

FIRST EMBODIMENT

RASTER LINE No.	PASS No.																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11												M1					Y4	
2		C9						M12											Y2
3			C7						M10						Y13				
4				C5					M8							Y11			
5					C3					M6							Y9		
6						C1					M4						Y7		
7	C12											M2					Y5		Cmis
8		C10						M13					x					Y3	Mmis
9			C8						M11									Y1	Ymis
10				C6					M9						Y12				
11					C4					M7						Y10			
12						C2					M5						Y8		Cmis
13	C13						x					M3					Y6		
14		C11											M1					Y4	Mmis
15			C9						M12									Y2	Ymis
16				C7						M10					Y13				
17					C5					M8						Y11			
18						C3				M6							Y9		
19							C1				M4						Y7		
20		C12										M2						Y5	
21			C10						M13				x					Y3	
22				C8						M11									Y1
23					C6					M9						Y12			
24						C4					M7						Y10		
25							C2					M5					Y8		
26		C13						x					M3				Y6		
27			C11											M1				Y4	
28				C9					M12									Y2	
29					C7					M10					Y13				
30						C5				M8						Y11			
31							C3				M6						Y9		
32								C1				M4						Y7	
33		C12											M2					Y5	
34			C10						M13					x					Y3
35				C8						M11									Y1
36					C6					M9						Y12			
37						C4					M7						Y10		
38							C2					M5					Y8		
39		C13						x					M3				Y6		
40			C11											M1				Y4	

WORKING NOZZLES IN FIRST COMPARATIVE EXAMPLE

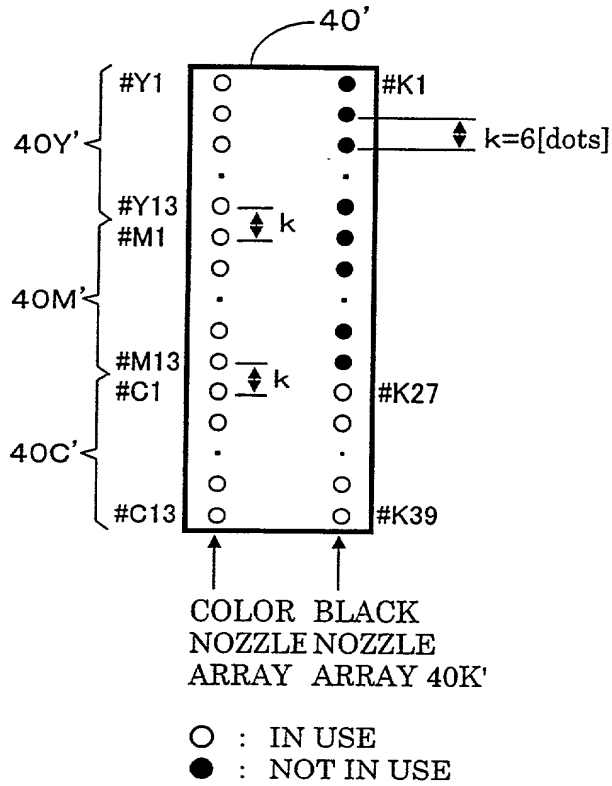


Fig. 10

FIRST COMPARATIVE EXAMPLE

RASTER

LINE

PASS No.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11						M11						Y11						
2		C9						M9						Y9					
3			C7						M7						Y7				
4				C5						M5						Y5			
5					C3						M3						Y3		
6						C1						M1						Y1	Cmis, Mmis, Ymis
7	C12						M12						Y12						
8		C10						M10						Y10					
9			C8						M8						Y8				
10				C6						M6						Y6			
11					C4						M4						Y4		
12						C2						M2						Y2	Cmis, Mmis, Ymis
13	C13						M13						Y13						
14		C11						M11						Y11					
15			C9						M9						Y9				
16				C7						M7						Y7			
17					C5						M5						Y5		
18						C3						M3						Y3	
19							C1						M1						Y1
20		C12						M12						Y12					
21			C10						M10						Y10				
22				C8						M8						Y8			
23					C6						M6						Y6		
24						C4						M4						Y4	
25							C2						M2						Y2
26		C13						M13						Y13					
27			C11						M11						Y11				
28				C9						M9						Y9			
29					C7						M7						Y7		
30						C5						M5						Y5	
31							C3						M3						Y3
32								C1						M1					Y1
33			C12						M12						Y12				
34				C10						M10						Y10			
35					C8						M8						Y8		
36						C6						M6						Y6	
37							C4						M4						Y4
38								C2						M2					Y2
39			C13						M13						Y13				
40				C11						M11						Y11			

Fig. 11

EQUIVALENT NOZZLE POSITIONING

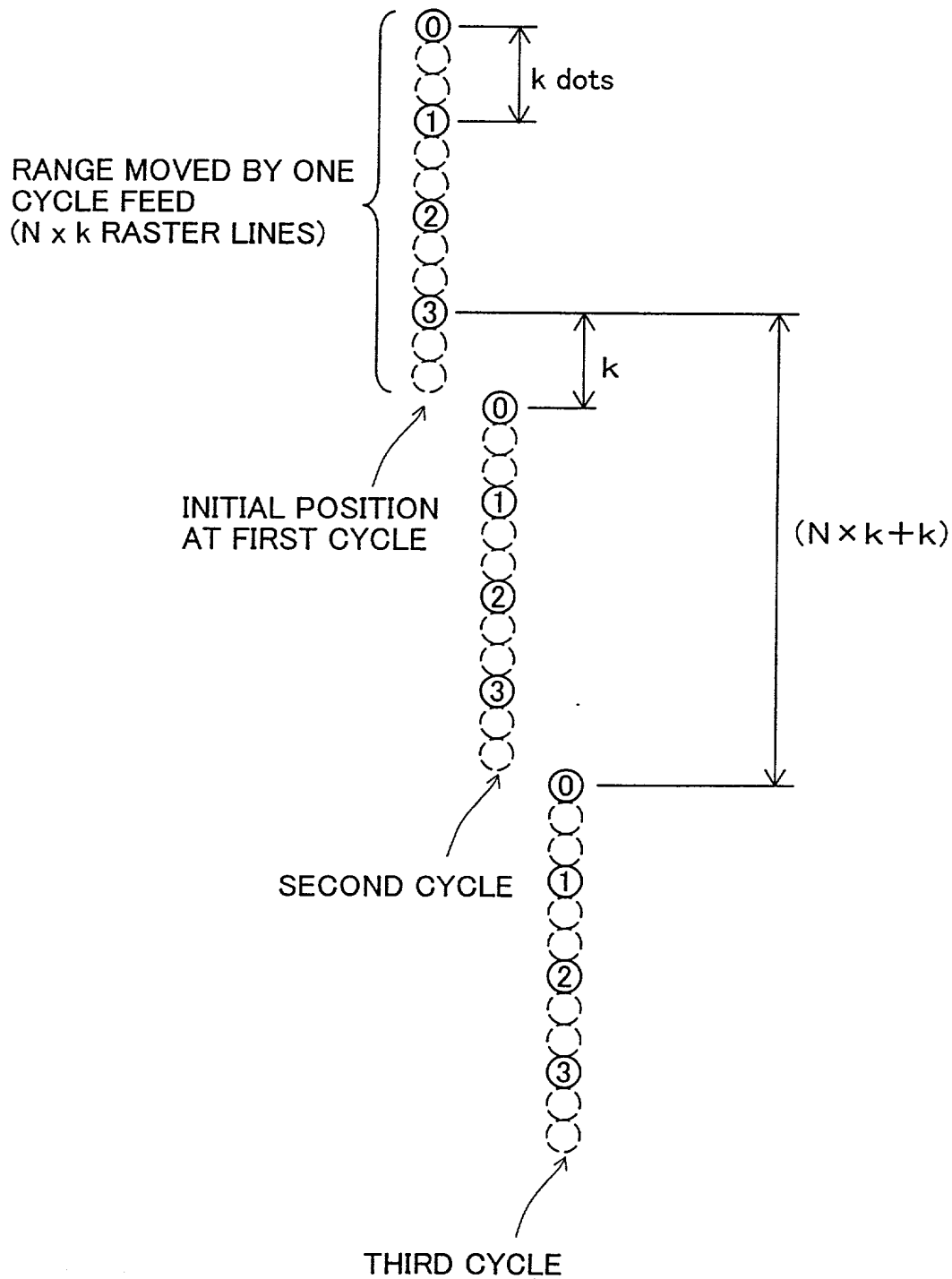


Fig. 12

SCAN PARAMETERS IN SECOND EMBODIMENT

Nozzle pitch : $k = 6$ [dots]

Number of scan repeats : $s = 1$

Number of working nozzles : $N = 15$

Number of effective nozzles : $N_{eff} = 15$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No.	0	1	2	3	4	5	6
FEED L [dots]	0	14	15	16	16	15	14
ΣL	0	14	29	45	61	76	90
$F=(\Sigma L)\%k$	0	2	5	3	1	4	0

Fig. 13

WORKING NOZZLES IN SECOND EMBODIMENT

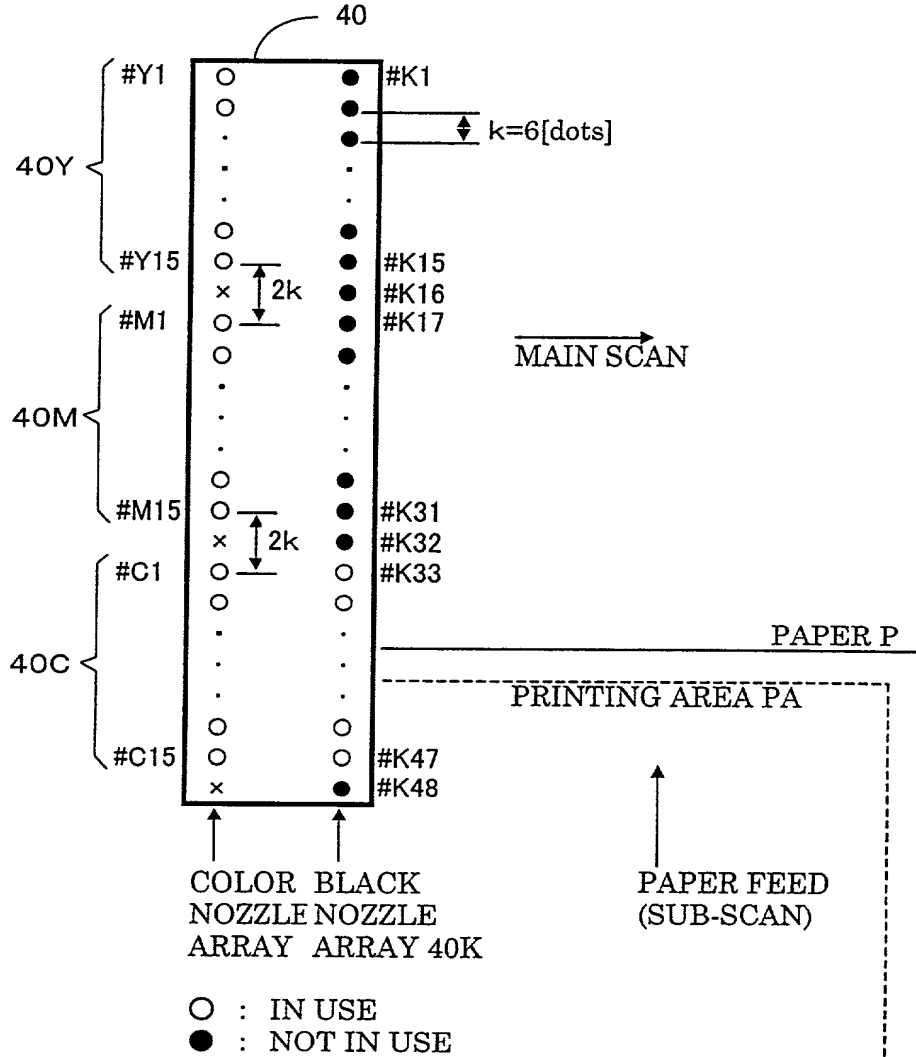


Fig. 14

SECOND EMBODIMENT

RASTER
 LINE

PASS No.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1			C8					M9						Y10					
2	C13						M14					Y15						Cmis, Mmis, Ymis	
3				C3						M4							Y5		
4		C11					M12					Y13							
5				C6						M7						Y8			
6					C1					M2								Y3	
7			C9					M10						Y11				Ymis	
8	C14						M15					x						Y1	Cmis, Mmis
9				C4						M5							Y6		
10		C12					M13						Y14						
11				C7						M8						Y9			
12					C2						M3							Y4	
13			C10					M11					Y12					Mmis, Ymis	
14	C15					x						M1						Y2	
15				C5						M6							Y7		
16		C13					M14						Y15						
17				C8						M9						Y10			
18					C3						M4							Y5	
19			C11					M12					Y13					Cmis, Mmis, Ymis	
20						C1						M2						Y3	
21				C6						M7							Y8		
22		C14					M15						x					Y1	
23				C9					M10						Y11				
24					C4					M5							Y6		
25			C12					M13					Y14						
26					C2						M3							Y4	
27				C7						M8							Y9		
28		C15				x						M1						Y2	
29				C10					M11					Y12					
30					C5					M6							Y7		
31			C13					M14						Y15					
32					C3						M4							Y5	
33				C8						M9							Y10		
34						C1					M2							Y3	
35			C11					M12					Y13						
36				C6						M7							Y8		
37		C14					M15						x						Y1
38					C4						M5							Y6	
39				C9						M10							Y11		
40						C2						M3						Y4	

Fig. 15

WORKING NOZZLES IN SECOND COMPARATIVE EXAMPLE

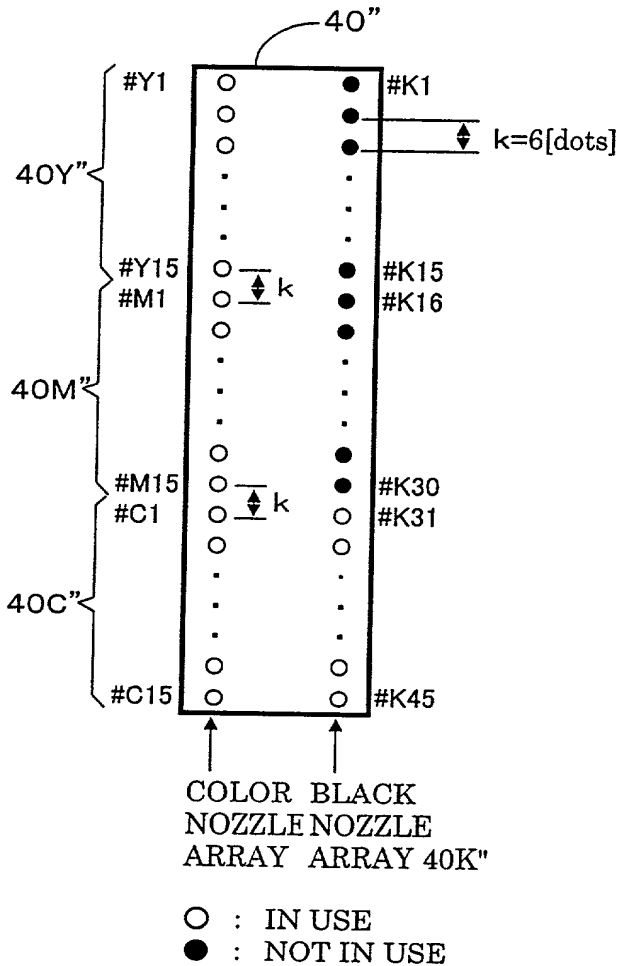


Fig. 16

SECOND COMPARATIVE EXAMPLE

RASTER

LINE

PASS No.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1			C8					M8							Y8				
2	C13						M13						Y13					Cmis, Mmis, Ymis	
3				C3						M3							Y3		
4		C11					M11						Y11						
5			C6					M6							Y6				
6					C1					M1							Y1		
7			C9					M9						Y9					
8	C14						M14						Y14					Cmis, Mmis, Ymis	
9				C4						M4							Y4		
10		C12					M12						Y12						
11			C7						M7						Y7				
12					C2					M2							Y2		
13			C10					M10						Y10					
14	C15						M15						Y15					Cmis, Mmis, Ymis	
15				C5						M5							Y5		
16	C13						M13						Y13						
17			C8					M8							Y8				
18				C3						M3							Y3		
19		C11					M11						Y11						
20					C1							M1					Y1		
21			C6						M6						Y6				
22	C14						M14						Y14						
23			C9					M9							Y9				
24				C4						M4							Y4		
25		C12					M12						Y12						
26					C2							M2					Y2		
27			C7							M7						Y7			
28	C15						M15						Y15						
29			C10					M10							Y10				
30				C5						M5							Y5		
31		C13					M13							Y13					
32					C3							M3					Y3		
33			C8							M8						Y8			
34						C1							M1					Y1	
35		C11					M11							Y11					
36			C6							M6						Y6			
37	C14						M14						Y14						
38				C4								M4					Y4		
39			C9							M9						Y9			
40						C2							M2					Y2	

FIRST ACTUATOR VARIATION

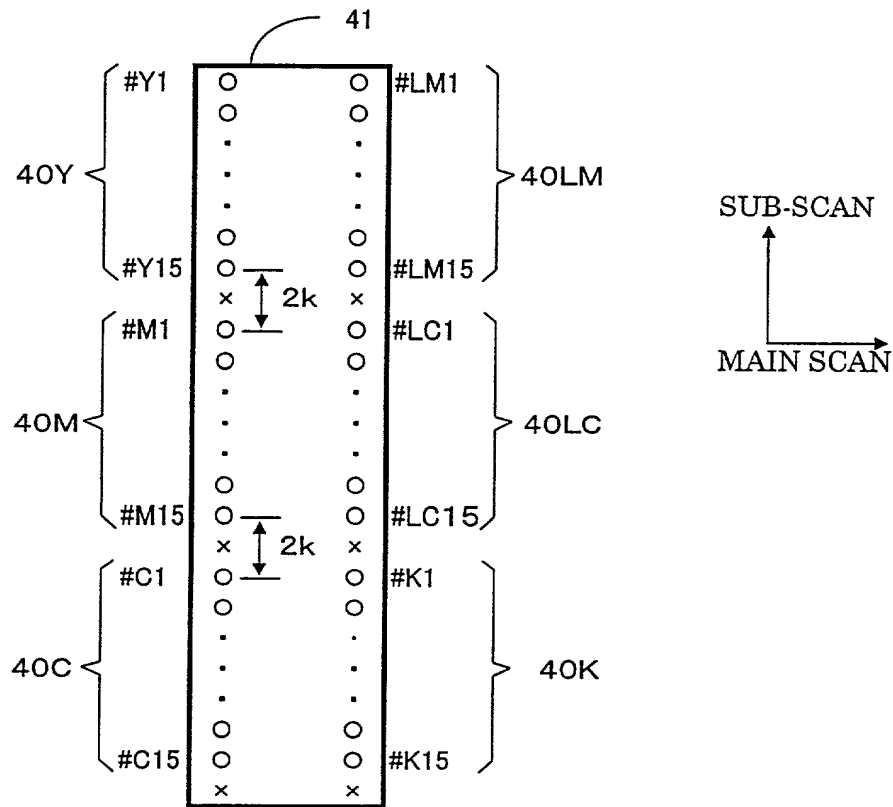


Fig. 18

SECOND ACTUATOR VARIATION

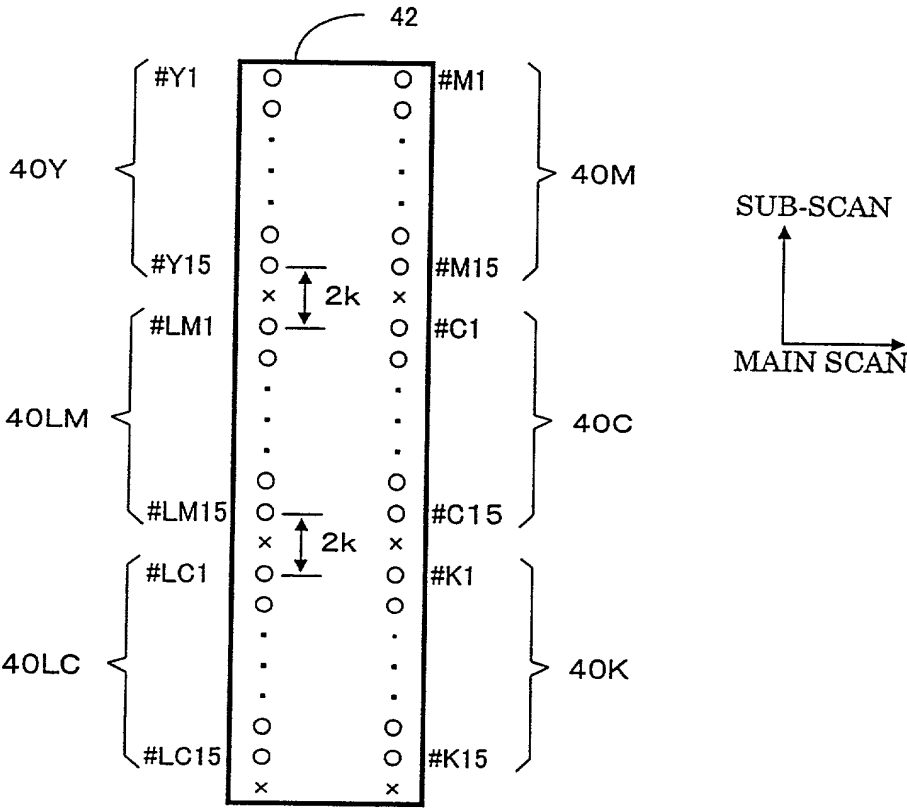


Fig. 19

THIRD ACTUATOR VARIATION

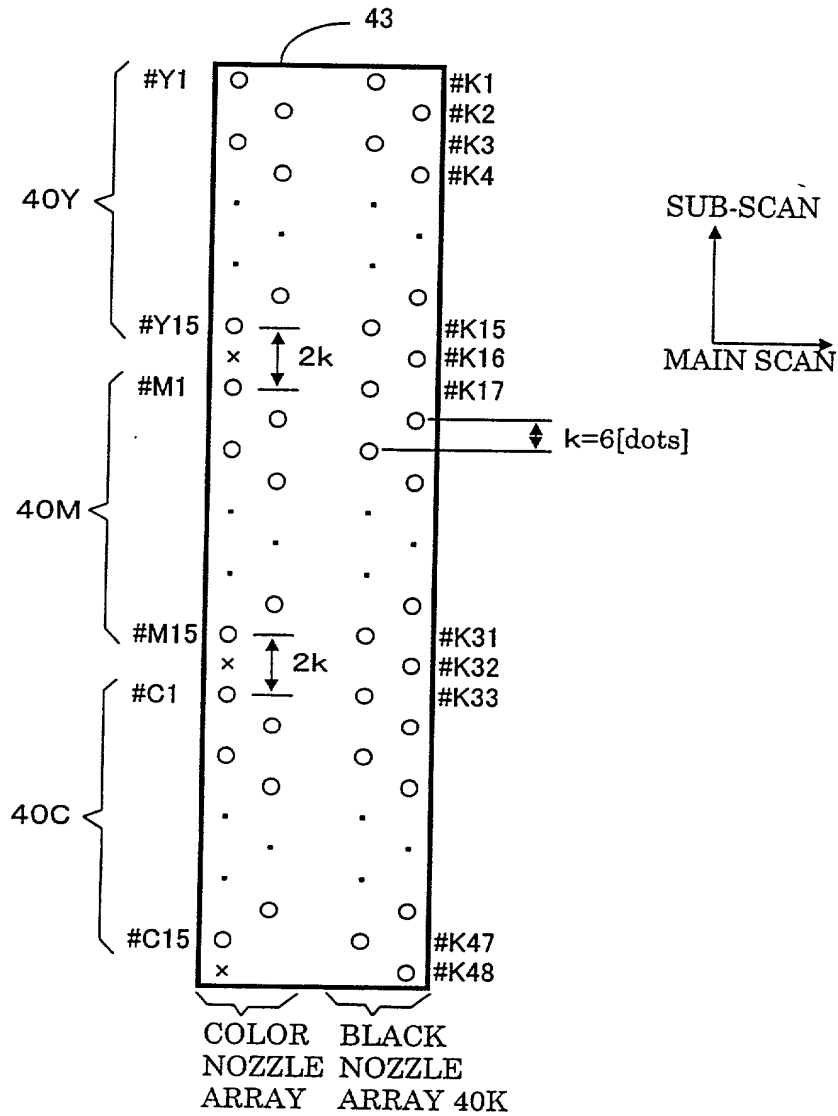


Fig. 20

FOURTH ACTUATOR VARIATION

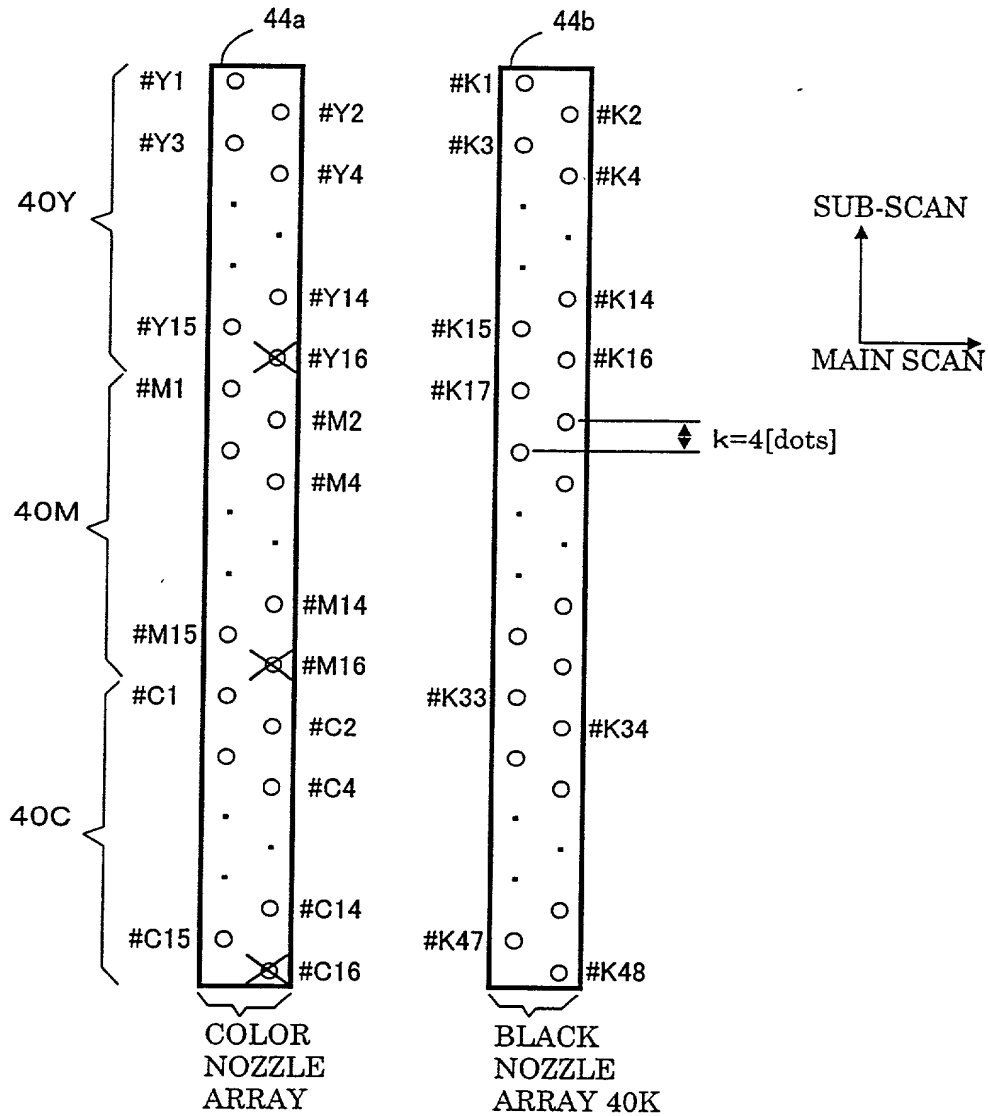


Fig. 21

FIFTH ACTUATOR VARIATION

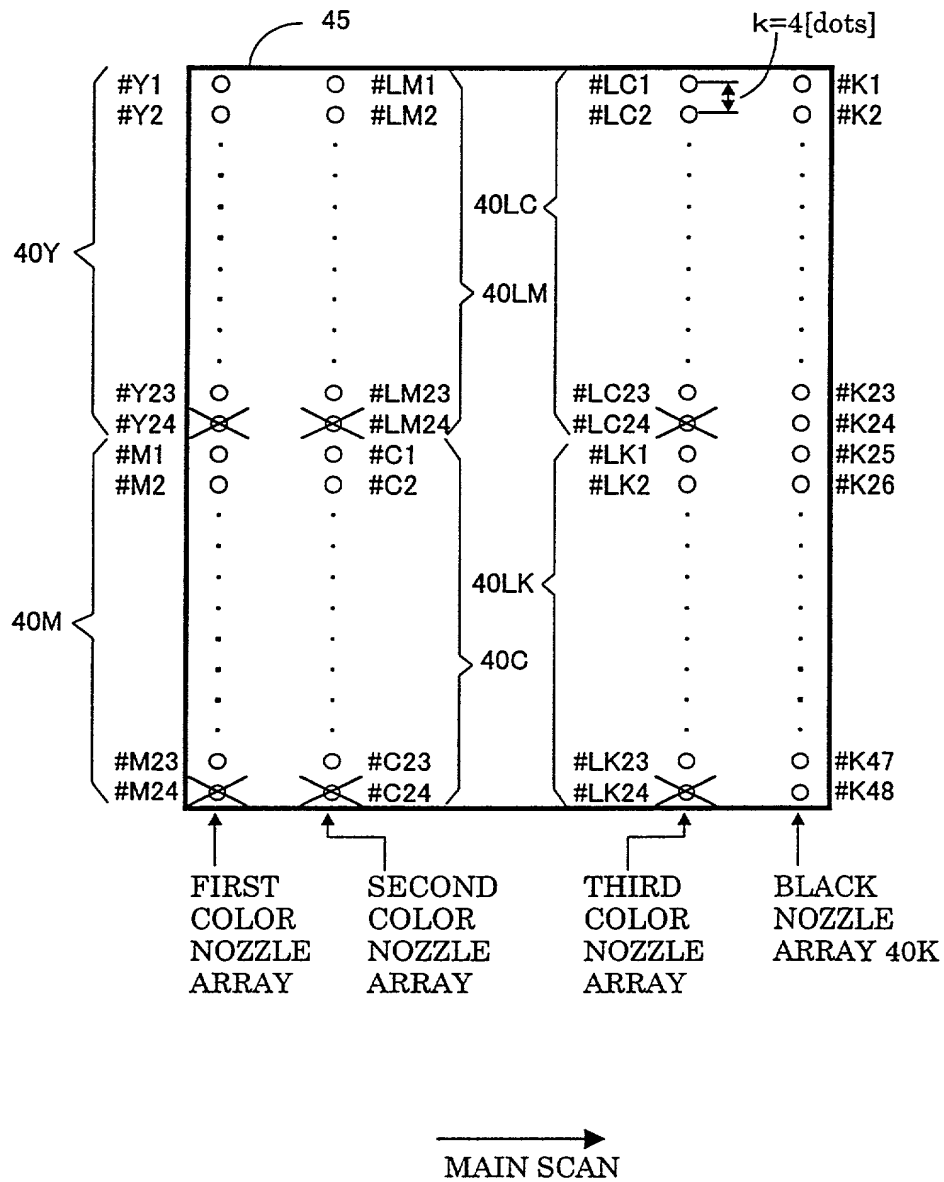


Fig. 22

SIXTH ACTUATOR VARIATION

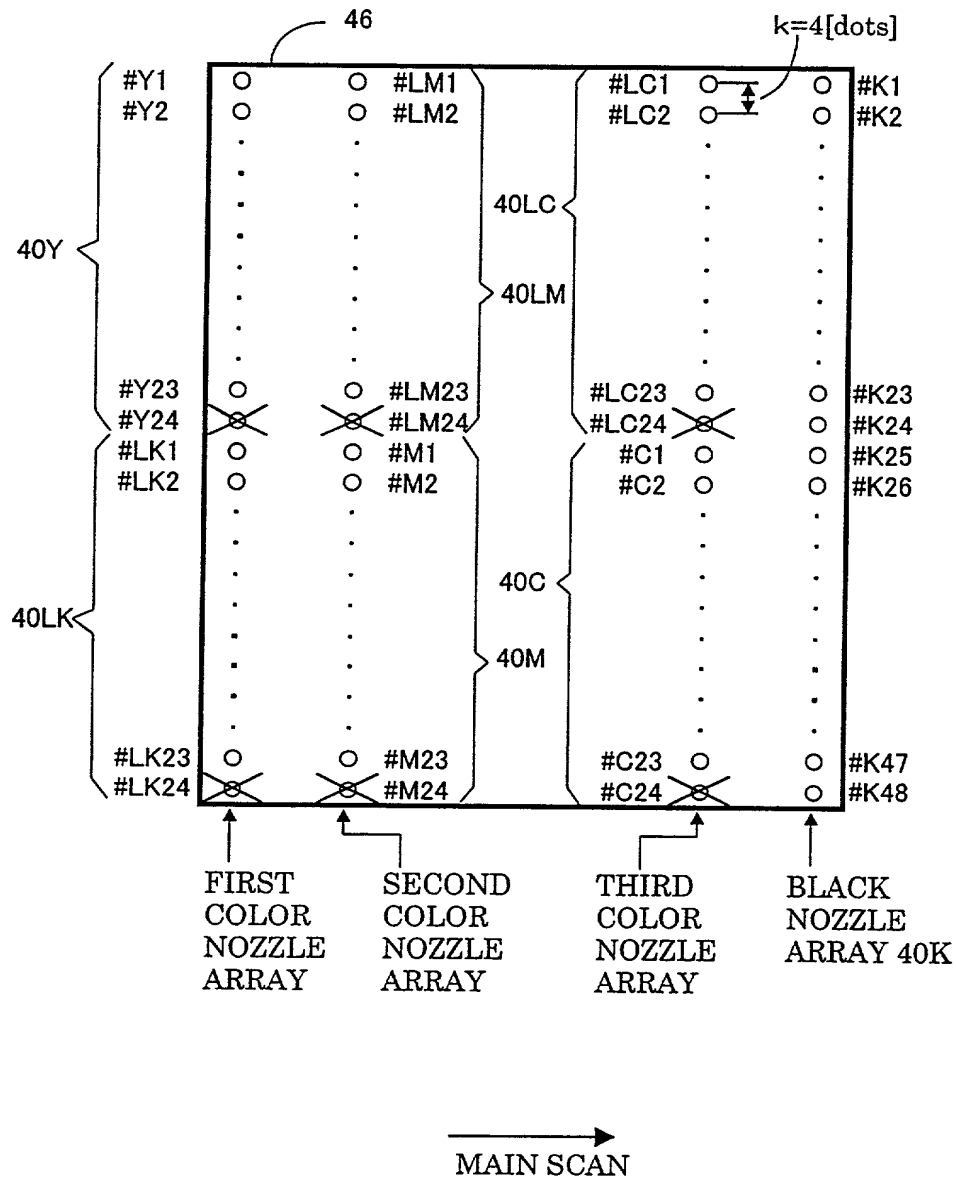


Fig. 23

SEVENTH ACTUATOR VARIATION

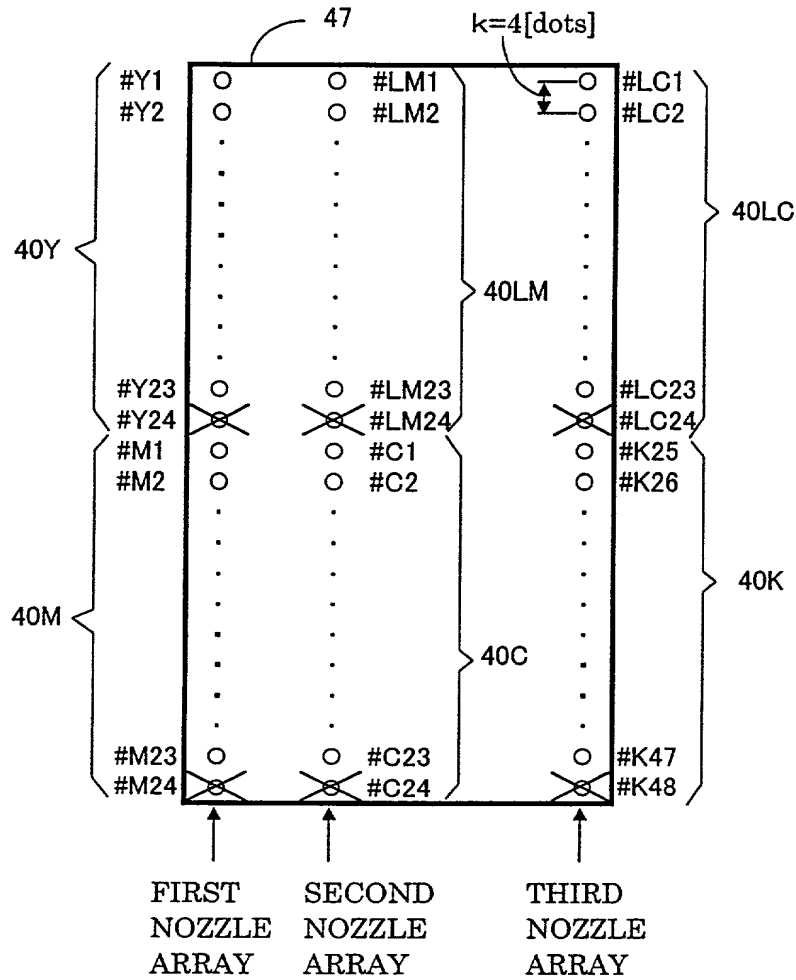


Fig. 24

EIGHTH ACTUATOR VARIATION

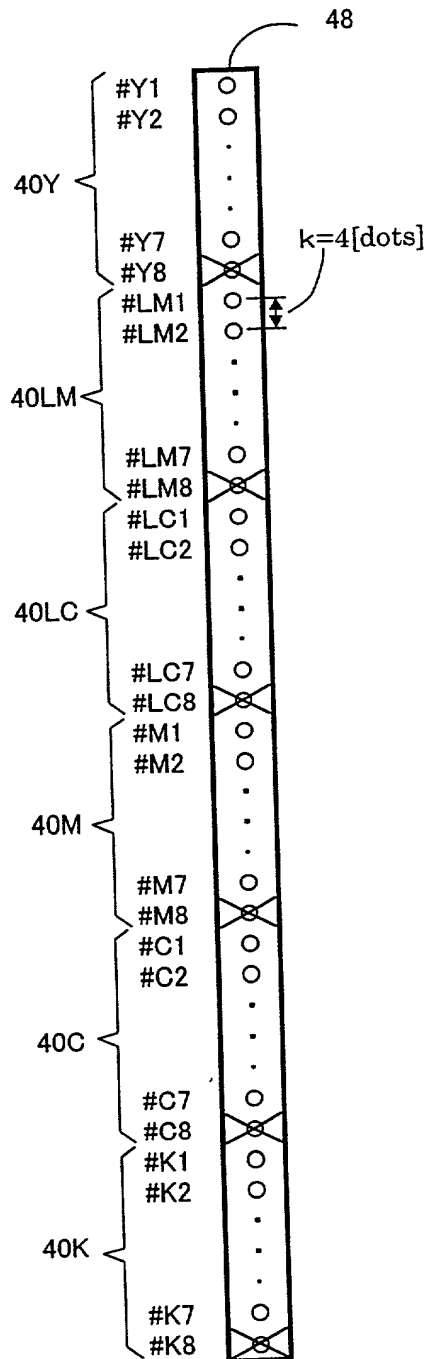


Fig. 25

INTERLACE SCHEME

NUMBER OF NOZZLES : $N = 3$
 NOZZLE PITCH : $K = 2$ [DOTS]
 NUMBER OF SCAN REPEATS : $s = 1$
 NOZZLE DENSITY : D [DOTS/INCH]
 SUB-SCANNING PITCH : L [INCH]
 DOT PITCH : W [INCH]

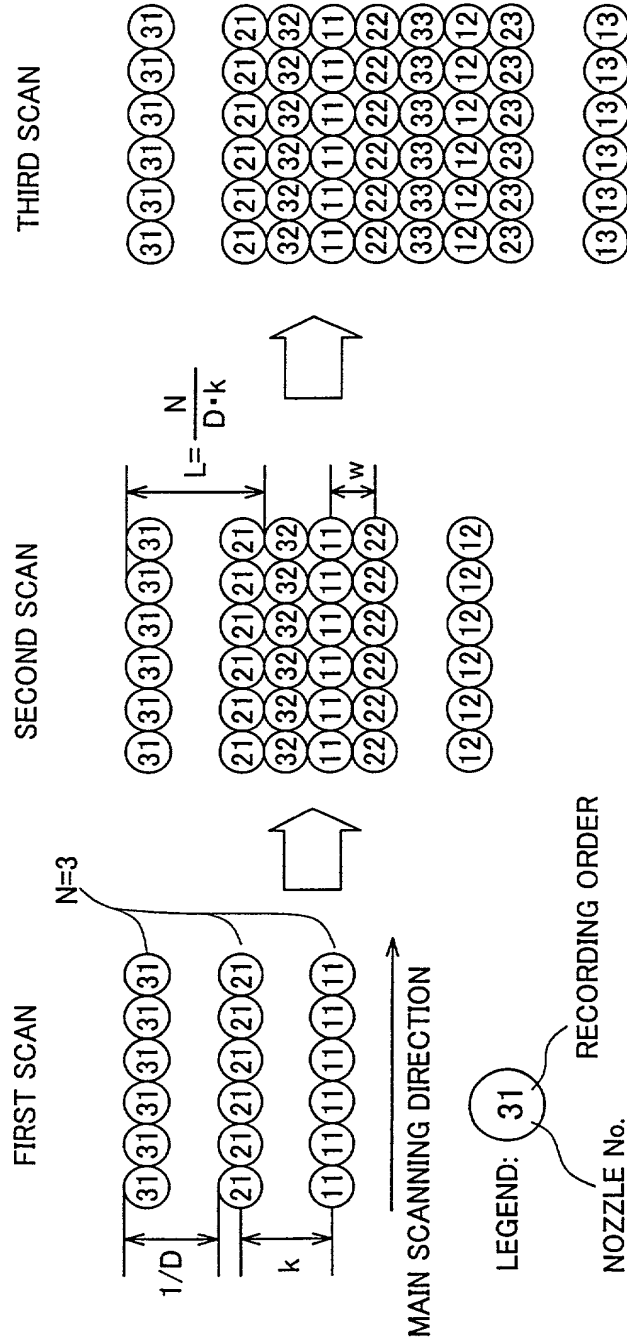
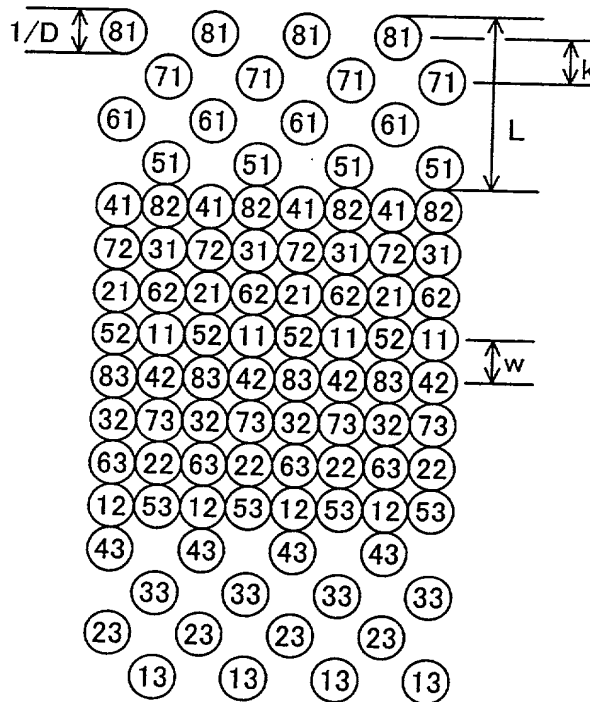


Fig. 26

OVERLAP SCHEME



NUMBER OF NOZZLES : $N = 8$
 NOZZLE PITCH : $k = 1$ [DOTS]
 NUMBER OF SCAN REPEATS : $s = 2$
 NOZZLE DENSITY : D [DOTS/INCH]
 SUB-SCANNING PITCH : L [INCH]
 DOT PITCH : w [INCH]

